SISO View on Common Human Representation and Interchange System (CHRIS)

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SISO Status Report
Excerpt from Spring 2000 SIW

Reflect Upon our Existence:
Why are We Here?
What Purpose Do We Serve?

- Who are our customers, and what do they want?
- How do standards help?
- What is SISO's role?
- What products should we be developing?

Who are our customers?

- Organizations that need to condition (train), or educate a constituency through rehearsal, repetitive conditioning, behavioral modification...
- Organizations that need to discover or predict the outcome of a situation through an experimental process

What Do Those Customers Want?

Training and Education Customers

- To assemble a system from as many existing components as possible, which meets or exceeds training requirements, for a minimum investment

Research Customers

- To assemble a system from as many existing components as possible, which answers the research questions with the required degree of confidence, for a minimum investment

How Do Standards Help?

Interoperability Standards

- Enable simulation “parts” to be plugged together for rapid assembly of systems. Enable reuse of “parts” developed for one system in another application.

Accreditation Standards and Practices

- Provide confidence to the user that the assembled system is providing meaningful, valid results to the degree specified in the accreditation.

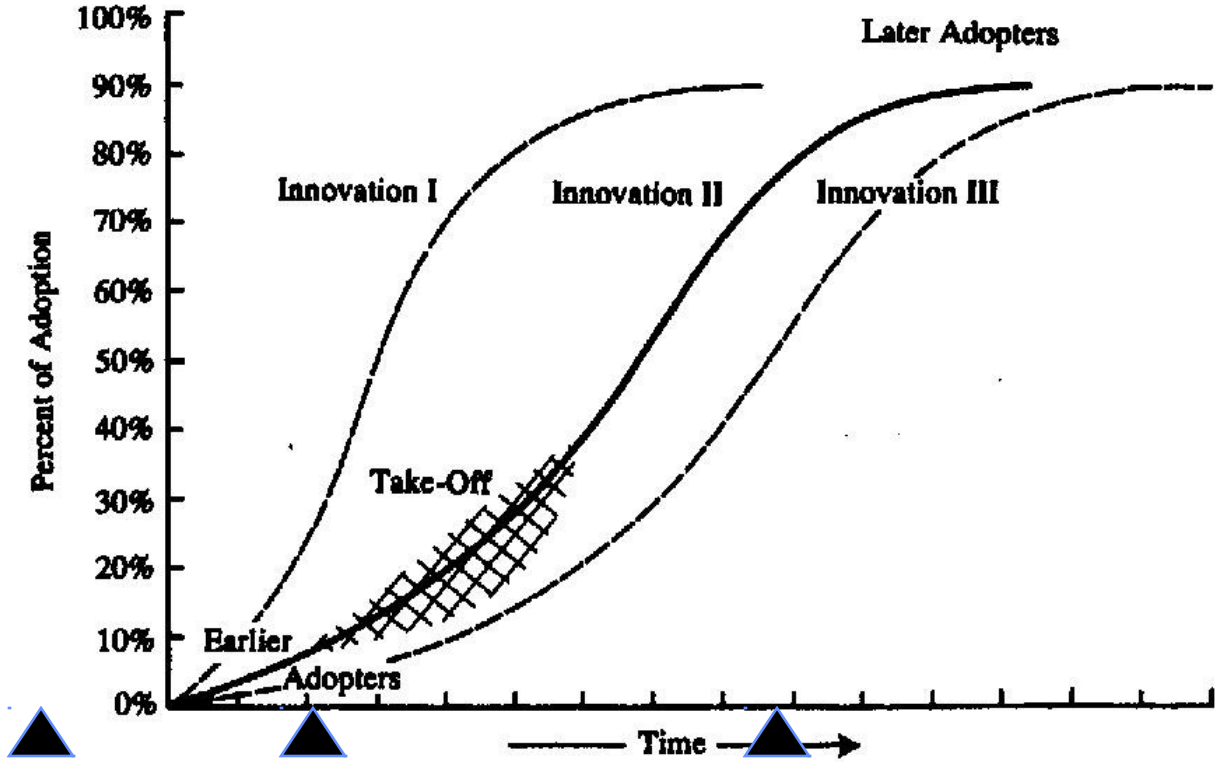
What is SISO's Role?

Be the Open Community Forum To:

- Identify areas where standards can enable interoperability and reuse
- Feed back industry needs to sponsors
- Develop, review, accredit, and archive standards
- Get community buy-in, grass-roots support for standards
- Educate and evangelize industry as to what's available
- Be the "nexus" for related and complementary products

“Diffusion of Innovations” by E. Rogers

Figure 1–1. Diffusion Is the Process by Which (1) an *Innovation* (2) Is *Communicated* Through Certain *Channels* (3) Over *Time* (4) Among the Members of a *Social System*



A Vision

Virtually Reality

Reality

What Products Should We Be Developing?

- Network Interoperability Standards
- Content Interchange Standards
- Accreditation Standards and Practices

Network Interoperability Standards

HLA Regimes Each Needing Reference FOM Standards

Data Exchange

Content Interchange Standards

- SEDRIS (Environmental Representation)
- Standard interchange format for physics models
- Standard interchange format for behavioral models
- Standard interchange format for simulation data (logger file format, AAR analysis format, statistical results…)
- Standard interchange format for scenario data

Accreditation Standards

Rating system for validity of a simulation for a particular use:

- Categorization example:

  SISO Level 4 - Simulation of an aggregated unit. Individual entities are not modeled. Statistical model driven by Monte Carlo technique. Not to be used for physics prediction. Experimental accuracy not considered valid below 85% repeatability.

- Practices Example:

  When combining SISO Level 3 and SISO Level 4 simulations, the results must be considered SISO Level 4 validity.

Conclusions on Our Existence

- Vital if the Modeling and Simulation world is to leverage off of earlier work. Without strong standards, and a forum in which to develop them, we are doomed to re-invent the wheel and never mature past our infantile stage.
- Everything SISO has done to date, combined, addresses less than 5% of the necessary solution space.

End of Spring 2000 SIW Excerpt

Big Question for CHRIS Workshop

Is the state of HBR modeling mature enough to this point to begin the development of an HBR interchange standard?

SISO Perspective Questions

- Is there general consensus amongst the community of researchers and HBR product developers on a common taxonomy and lexicon?
- Is there an existence proof of an interchange/conversion format between two dissimilarly modeled cognitive models?
- Is the interchange of the cognitive state actually the beneficial interchange or is the physics level more useful?
- Would the constraint of a fixed lexicon actually inhibit the creative development of new cognitive modeling approaches?

SEDRIS Observations

Synthetic environment data interchange problem is trivial compared to interchange of cognitive information:

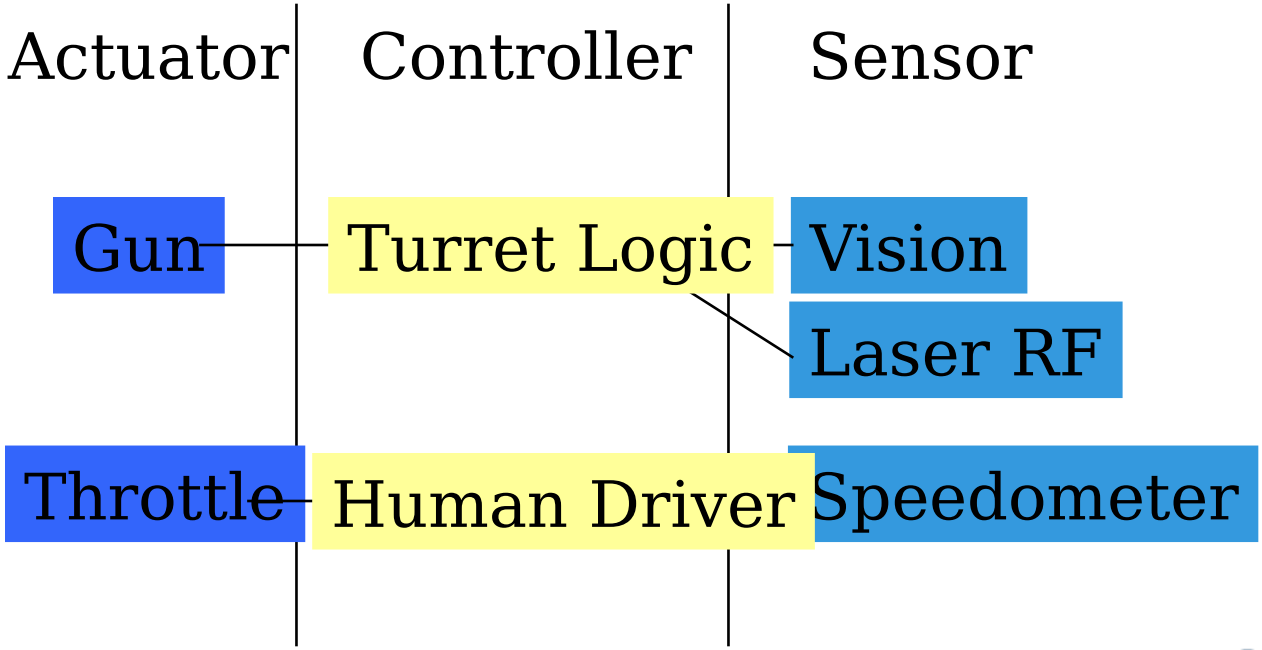
- Closer you get to physics the easier the problem
- SEDRIS had Project 2851, Multigen, S1000, and CTDB to stand on
- Huge terrain repository was available in standard format (DTED, DFAD…)

Removing SISO Hat, Putting on MAK HAT

- Interoperability standards are good for business
- Vendors can build products to meet the standards and make them modular/plug compatible.
- Competition between vendors yields best value for customers
- Must have industry ownership of standard, and market demand for products to be successful

VR-Forces Composable Architecture

Standard interface for "Controller" module would stimulate cottage industry for cognitive modules and CGF infrastructure products



Conclusions

- Standards are good for industry, minimize duplication of effort and wasting of money
- Pushing a standard too soon, before industry consensus and existence proofs, will result in failure, backlash, and stifling of innovation
- The closer to Newtonian Physics the easier the simulation interoperability standard